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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/721,457

11/26/2003

Yoshinori Yamaguchi

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03/23/2006

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EXAMINER

STOCK JR, GORDON J

ART UNIT

PAPER NUMBER

2877

DATE MAILED: 03/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/721,457

Applicant(s)

YAMAGUCHI, YOSHINORI

Examiner

Gordon J. Stock

Art Unit

2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13 and 15 is/are allowed.
- 6) ☒ Claim(s) 1, 4-12, 14 is/are rejected.
- 7) ☒ Claim(s) 2 and 3 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 April 2004 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>20040220</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on February 20, 2004 is being considered by the examiner.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

3. Figures 11-15 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.
4. The drawings and specification are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 17 of Fig. 15. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each

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drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

5. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the 'rotation mechanism for rotating the projector unit' of claim 5; 'the rotation mechanism for rotating the polarizing direction selection unit' of claim 6; 'the light forming optical system' of claims 9 and 10 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will

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be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. **Claims 1, 7, 11, 14** are rejected under 35 U.S.C. 102(e) as being anticipated by **Marschner et al. (2005/0089199)**.

As for **claims 1 and 14**, Marschner discloses the following: a projector unit for projecting linearly polarized light (Fig. 2: 206); at least one image input unit disposed in a position different in principal point from the projector unit (Fig. 2: 202); a polarizing direction selection unit for selecting light having a polarizing direction from light reflected by the subject, a polarizing filter (paragraph 0047 lines 25-35); the at least one image input unit captures a reflected image based on the light selected by the polarizing direction selection unit from light reflected and measures a 3D shape of the subject based on the reflected image (Fig. 2: 202, 208, 3d data; paragraph 0047 lines 25-35; paragraphs 0049-0050).

As for **claim 7**, Marschner discloses everything as above (see **claim 1**). In addition, he discloses the polarizing direction selected by the polarizing direction is substantially perpendicular to the polarizing direction of the linearly polarized light in terms of angle (paragraph 0047 lines 25-35).

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As for **claim 11**, Marschner discloses everything as above (see **claim 1**). In addition, he discloses a polarizing filter is used as the polarizing direction selection unit (paragraph 0047 lines 25-35).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. **Claim 4 and 8** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Marschner et al. (2005/0089199)**.

As for **claim 4**, Marschner discloses everything as above (see **claim 1**). He does not explicitly state an angle adjustment unit; however, he states that the polarizing filter is oriented perpendicularly to the first filter (paragraph 0047 lines 30-35). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have the apparatus comprise an angle adjustment unit in order to orient the polarizing filter perpendicular to the polarizing filter of the projection device to eliminate specular reflection from the acquired image.

As for **claim 8**, Marschner discloses everything as above (see **claim 4**). In addition, he discloses the reflected image based on specular reflect light is removed (paragraph 0047 lines 30-35).

10. **Claim 5, 6, 9, 10, and 12** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Marschner et al. (2005/0089199)** in view of **Halioua et al. (4,641,972)**.

As for **claims 5 and 6**, Marschner discloses everything as above (see **claim 4**). He is silent concerning a rotation mechanism. However, Halioua in a surface profilometry teaches a rotation mechanism for adjusting polarization (Fig. 2: P). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have a rotation mechanism in order to adjust the position of the polarizing filter to be perpendicular to the polarization of the projector in order to remove specular light from the image acquired.

As for the phrases, 'for rotating the projector unit' in claim 5 and 'for rotating the polarizing direction selection unit' in claim 6 it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. Ex Parte Masham, 2 USPQ F.2d 1647 (1987).

As for **claims 9 and 10**, Marschner discloses everything as above (see **claim 1**). He also discloses a light source and a polarizing filter, a polarized light conversion optical system (Fig. 2 : 206 paragraph 0047 lines 20-35). He is silent concerning a light forming optical system but he discloses the projection system comprising structured pattern generation (Fig. 2 : 204 and 206 ; paragraph 0047 lines 12-17). And Halioua in a surface profilometry teaches a projector comprising a light forming optical system for producing a patterned structure (Fig. 2 : 113, 114, W, Q). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to have the projector comprise a light forming optical system, a structured light pattern system, in order to provide a pattern to the subject being investigated for image analysis and pattern recognition to determine a 3d profile.

As for **claim 12**, Marschner discloses everything as above (see **claim 1**). He is silent concerning light with a plurality of stripes encoded by use of the linearly polarized light is projected. However, he does mention using a structured pattern to illuminate the subject being investigated (paragraph lines 12-17). And Halioua in a surface profilometry system teaches using a plurality of stripes to determine a profile (Fig. 10 ; col. 1, lines 10-17). Therefore, it would be obvious for one of ordinary skill in the art at the time the invention was made to have light with a plurality of stripes illuminate the subject being profiled for image analysis and pattern recognition to determine the subject's 3d shape.

Allowable Subject Matter

11. **Claims 13 and 15** are allowed.

Claims 2 and 3 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As to **claim 2**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in a range finder the 'identical principal point image input unit,' in combination with the rest of the limitations of **claim 2**.

As to **claim 3**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in a range finder the 'principal point displacement image input unit,' in combination with the rest of the limitations of **claim 3**.

As to **claim 13**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in a range finder the 'an identical principal point image input unit' and 'at least

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one nonidentical principal point image input unit' in combination with the rest of the limitations of **claim 13**.

As to **claim 15**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in a 3d image acquired method the particular monitoring step, in combination with the rest of the limitations of **claim 15**.

Fax/Telephone Numbers

If the applicant wishes to send a fax dealing with either a proposed amendment or a discussion with a phone interview, then the fax should:

1) Contain either a statement "DRAFT" or "PROPOSED AMENDMENT" on the fax cover sheet; and

2) Should be unsigned by the attorney or agent.

This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

Papers related to the application may be submitted to Group 2800 by Fax transmission. Papers should be faxed to Group 2800 via the PTO Fax machine located in Crystal Plaza 4. The form of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Machine number is: (571) 273-8300

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gordon J. Stock whose telephone number is (571) 272-2431.

The examiner can normally be reached on Monday-Friday, 10:00 a.m. - 6:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr., can be reached at 571-272-2800 ext 77.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

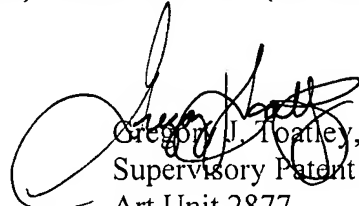
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may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private Pair system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



gs

March 20, 2006



Gregory J. Toatley, Jr.
Supervisory Patent Examiner
Art Unit 2877
20/06/06